

Abstract Submitted
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Convective dissolution in anisotropic porous media¹ MARCO DE PAOLI, Univ of Udine, FRANCESCO ZONTA, TU Wien, ALFREDO SOLDATI, Univ of Udine and TU Wien — Solute convection in porous media at high Rayleigh-Darcy numbers has important fundamental features and may also bear implications for geological CO_2 sequestration processes. With the aid of direct numerical simulations, we examine the role of anisotropic permeability γ (the vertical-to-horizontal permeability ratio) on the distribution of solutal concentration in fluid saturated porous medium. Interestingly, we find that the finite-time (short-term) amount of solute that can be dissolved in anisotropic sedimentary rocks ($\gamma < 1$, i.e. vertical permeability smaller than horizontal permeability) is much larger than in isotropic rocks. We link this seemingly counterintuitive effect with the occurring modifications to the flow topology in the anisotropic conditions.

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